



MOORPARK

2000-2005 Safety Element

March 2001

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

SEP 12 2003

UNIVERSITY OF CALIFORNIA

CITY OF MOORPARK
Community Development Department
799 Moorpark Avenue
Moorpark, CA 93021

#1139.00

RESOLUTION NO. 2001-1823

A RESOLUTION OF THE CITY COUNCIL OF THE CITY
OF MOORPARK, CALIFORNIA, ADOPTING AN UPDATE
TO THE SAFETY ELEMENT OF THE CITY OF
MOORPARK GENERAL PLAN

WHEREAS, at a duly noticed public hearing conducted on March 21, 2001, regarding consideration of an update to the Safety Element of the City of Moorpark General Plan; and

WHEREAS, at the meeting of March 21, 2001 the City Council of the City of Moorpark opened the public hearing, took testimony from all those wishing to testify, and closed the public hearing; and

WHEREAS, after review and consideration of the information contained in the Planning Commission staff reports dated November 6, November 20, and December 6, 2000, along with the Planning Commission Resolution PC-2000-400 making a recommendation to the City Council on the adoption of said element.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MOORPARK, DOES HEREBY RESOLVE AS FOLLOWS:

SECTION 1. That the City Council hereby determines that the Revision to the Safety Element of the City of Moorpark General Plan does not have the potential to create a significant effect upon the environment, and that a Negative Declaration in accordance with the provisions of CEQA (California Environmental Quality Act) may be issued, pursuant to Section 15074 of the California Code of Regulations.

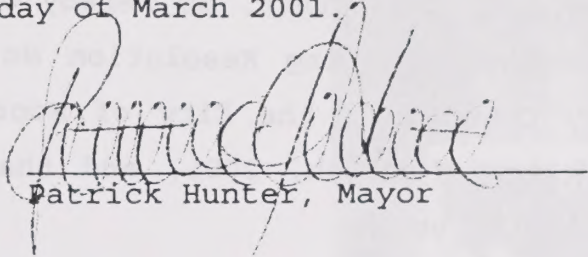
SECTION 2. That the City Council hereby adopts and approves the Updated Safety Element of the Moorpark General Plan, attached as Exhibit A, and incorporated herein by reference), based upon the following findings:

- A. The Updated Safety Element establishes goals, policies and implementation strategies that address the public health, safety, and general welfare of the community, and are consistent with the other elements of the General Plan.
- B. The Updated Safety Element satisfies and is consistent with provisions for safety elements as contained within Section 65302(g) of the State of California Government Code regulating inclusion of a Safety Element within the community General Plan Safety Element.

- C. The Updated Safety Element provides current technical and general information related to safety and hazard issues such as earthquake, fire and flood that may affect development within the defined community.

SECTION 3. The City Clerk shall certify to the adoption of this resolution and shall cause a certified resolution to be filed in the book of original Resolutions.

PASSED AND ADOPTED this 21st day of March 2001.


Patrick Hunter, Mayor

ATTEST:

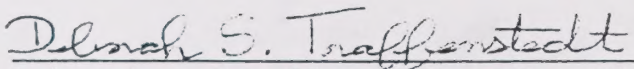

Deborah S. Traffenstedt, City Clerk



Exhibit "A"

Safety Element of the Moorpark General Plan/2000
Technical Background Report for the Safety Element
(Technical Background Report for the Safety Element is not
included as an attachment but is on file with the Community
Development)

STATE OF CALIFORNIA)
COUNTY OF VENTURA) ss.
CITY OF MOORPARK)

I, Deborah S. Traffenstedt, City Clerk of the City of Moorpark, California, do hereby certify under penalty of perjury that the foregoing Resolution No. 2001-1823 was adopted by the City Council of the City of Moorpark at a meeting held on the 21st day of March, 2001, and that the same was adopted by the following vote:

AYES: Councilmembers Harper, Mikos, Millhouse, Wozniak
 and Mayor Hunter
NOES: None
ABSENT: None
ABSTAIN: None

WITNESS my hand and the official seal of said City this 18th day of April, 2001.

Deborah S. Traffenstedt
Deborah S. Traffenstedt, City Clerk
(seal)





MOORPARK 2000-2005 Safety Element





MOORPARK

2000-2005 Safety Element

March 2001

CITY OF MOORPARK
Community Development Department
799 Moorpark Avenue
Moorpark, CA 93021

#1139.00

**CITY OF MOORPARK
SAFETY ELEMENT**

TABLE OF CONTENTS

Section	Page
I. INTRODUCTION	1-1
II. IMPORTANT TERMS AND CONCEPTS	2-1
A. Earthquake Magnitude	2-1
B. Flood Events	2-1
III. RELATED PLANS AND PROGRAMS	3-1
A. California Seismic Hazards Mapping Act	3-1
B. The Alquist-Priolo Earthquake Fault Zoning Act	3-1
C. FEMA Flood Insurance Program	3-1
D. Uniform Building Code	3-1
E. California Environmental Quality Act	3-2
IV. GEOLOGIC AND SEISMIC HAZARDS	4-1
A. Local Geologic Conditions	4-1
B. Seismic Hazards	4-1
Faults and Earthquakes	4-1
Seismic-related Hazards	4-2
Goals and Policies	4-4
C. Geologic Hazards	4-6
Landslides	4-6
Debris Flow	4-6
Expansive Soils	4-8
Ground Subsidence	4-8
Goals and Policies	4-8
V. HAZARDOUS MATERIALS AND WASTES	5-1
Goals and Policies	5-1
VI. FLOODING	6-1
A. Historic Flood Flows	6-1
B. Inundation	6-1
C. Flood Protection Measures	6-4
Goals and Policies	6-4

TABLE OF CONTENTS

VII. FIRE HAZARDS	7-1
A. Wildland Fires	7-1
B. Fire Prevention	7-1
Goals and Policies	7-3
VIII. EMERGENCY PREPAREDNESS	8-1
A. Earthquake Preparedness	8-1
B. Hazardous Materials Preparedness	8-1
C. Fire Preparedness	8-1
D. Emergency Services	8-3
Goals and Policies	8-3
IX. IMPLEMENTATION PROGRAM	9-1
A. Geologic and Seismic Hazards	9-1
B. Hazardous Materials and Wastes	9-3
C. Flooding	9-4
D. Fire Hazards	9-6
E. Emergency Preparedness	9-8
X. GLOSSARY	10-1

List of Tables

Table	Page
2-1 Modified Mercalli Scale	2-2
7-1 Minimum Fire Protection Flows – Uniform Fire Code	7-3

List of Figures

Figure	Page
4-1 Alquist-Priolo Earthquake Fault Zones	4-3
4-2 Seismic Hazard Zones	4-5
4-3 Existing Landslides	4-7
6-1 FIRM Flood Zones	6-2
6-2 Dam Inundation Path and Reservoir Locations	6-3
7-1 Moorpark Region Fire Susceptibility Map	7-2
8-1 Critical Facilities	8-2

I. INTRODUCTION

Safety is an important indicator of a community's quality of life. Moorpark residents recognize that limited or controlled exposure to hazardous environmental conditions and good emergency response services contribute to the overall livability of their community.

The Safety Element addresses safety issues arising from both naturally occurring and human-caused conditions, and presents goals and policies focused on reducing the potential risk of death, injuries, property damage, and economic and social dislocation resulting from hazards. Examples of ways Moorpark can use the Safety Element analysis include: (1) identifying fault zones to guide development approaches; (2) determining the probability and location of flooding to help identify properties most likely impacted by flood events; and (3) identifying the use of hazardous materials in commercial, industrial, and household products to help reduce the risk of hazardous waste contamination and accidents.

Hazards include earthquakes, dam or reservoir failure, contamination of soil and local water resources, hazardous materials associated with commercial and industrial business activity, and fire. These hazards can impact the lives of residents and business employees within Moorpark by triggering the disruption of essential facilities and systems such as water, sewer, gas, electricity, transportation, communications, irrigation and drainage systems.

Public safety and service issues relevant to Moorpark are:

- Geologic and Seismic Hazards
- Hazardous Materials and Wastes
- Flooding and Water Contamination
- Fire Hazards
- Emergency Preparedness

The Safety Element presents the City's approaches to addressing these issues in the context of goals and policies. Goals are overall statements of purpose and direction. The policies serve as guidelines for reducing the risk associated with natural and human activity hazards, and also direct and maximize community emergency preparedness.

II. IMPORTANT TERMS AND CONCEPTS

This Element uses the following technical terms to discuss earthquakes and flood conditions. Additional terms are defined in the Glossary.

A. Earthquake Magnitude

Moorpark lies within a region where earthquakes are not an uncommon occurrence. Earthquakes result from a shift or movement along weak points or contacts of geologic formations or structures. Scientists use the term *magnitude* to describe the relative energy release by such movement. An earthquake's magnitude is based on the size of the earthquake's seismic waves, which are recorded on a seismograph. Magnitude generally is related and expressed using a logarithmic scale.

The amount of energy released, for example, from a 6.0 earthquake is 10 times greater than that associated with a 5.0 event. Scientists consider a large earthquake as one having a magnitude of 7.0 or greater. For purposes of comparison, the 1987 Whittier earthquake registered a 5.9 magnitude, while the 1994 Northridge temblor measured 6.7 magnitude.

Magnitude differs from earthquake intensity, which is the physical, observable effects an earthquake has on structures and people. News media generally do not report earthquake intensity according to scales or references; instead, the media rely upon pictures and comparisons to past events to show how an earthquake affects people and property. The Modified Mercalli scale has been developed to describe an earthquake's intensity relative to its magnitude. Table 2-1 presents the Modified Mercalli scale.

The Modified Mercalli Scale represents a subjective measurement or description of ground shaking associated with a seismic event. The peak (maximum) horizontal ground acceleration, or PGHA, is used by seismologists to quantitatively measure ground shaking at particular locations. These values - expressed in units of g, which is a fraction or percentage of gravitational acceleration - provide useful information for determining how buildings must be constructed to withstand collapse or other damage in the event of an earthquake.

B. Flood Events

The Federal Emergency Management Agency (FEMA) is mandated by the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 to evaluate flood hazards and provide Flood Insurance Rate Maps for local and regional planners to promote sound land use and floodplain development. Using information gathered in engineering studies, FEMA engineers and cartographers determine Special Flood Hazard Areas (SFHAs). SFHAs are those areas that have a 1% chance of a major flood event occurring in any one year. This type of flood is referred to as the "base flood" or 100-year flood. The base flood is a regulatory standard used by the National Flood Insurance Program as the basis for insurance requirements nationwide. Flood hazard planning practices addresses such storms, as well as, for example, 50-year and 500-year events.

Table 2-1: Modified Mercalli Scale for Describing Earthquake Intensity

Effects		Magnitude
I	Not felt except by a very few, and only under special circumstances.	Below 3.0 magnitude on Richter Scale
II	Felt by persons at rest and on upper floors.	3.0-3.9 magnitude on Richter Scale
III	Felt indoors. Hanging objects swing slightly. Vibration feels like passing of light trucks. May not be recognized as an earthquake.	4.0-4.9 magnitude on Richter Scale
IV	Hanging objects swing noticeably. Vibration like passing of heavy trucks. Standing automobiles rock. Windows, dishes, doors rattle. Glasses clink. Wooden walls and frames creak.	4.0-4.9 magnitudes on Richter Scale
V	Felt outdoors by most people. Sleepers awakened. Liquids may spill. Small unstable objects displaced. Doors swing, close, open. Pictures move. Some breakage of plaster.	4.0-4.9 magnitude on Richter Scale
VI	Felt by all. Persons walk unsteadily. Windows, dishes, glassware broken. Objects, books, etc., off shelves. Pictures off walls. Furniture moved or overturned. Weak plaster and masonry cracked. Small bells ring (church, school). Trees, bushes shaken visibly.	5.0 -5.9 magnitude on Richter Scale
VII	Difficult to stand. Noticed by drivers of automobiles. Hanging objects shake. Furniture broken. Weak chimneys broken at roof line. Fall of plaster, loose bricks, stones, tiles, cornices; also unbraced parapets and architectural ornaments. Waves on ponds; water turbid with mud. Small slides and caving in along sand and gravel banks. Large bells ring. Concrete irrigation ditches damaged.	6.0-6.9 magnitude on Richter Scale
VIII	Steering of automobiles affected. Fall of stucco and some masonry walls. Twisting, fall of chimneys, factory stacks, monuments, towers, elevated tanks. Frame houses moved on foundation if not bolted down; loose panel walls thrown out. Branches broken from trees. Cracks in wet ground and on steep slopes.	6.0-6.9 magnitude on Richter Scale
IX	General panic. Masonry destroyed or heavily damaged. General damage to foundations. Frames cracked. Serious damage to reservoirs. Underground pipes broken. Conspicuous cracks in ground.	7.0-7.9 magnitude on Richter Scale
X	Most masonry and frame structures destroyed with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes, embankments. Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. Rails bent slightly.	7.0-7.9 magnitude on Richter Scale
XI	Rails bent greatly. Underground pipelines completely out of service. Damage severe to wood-frame structures, especially near shock centers. Few, if any, masonry structures remain standing. Large, well-built bridges destroyed by the wrecking of supporting piers or pillars.	8.0 8.9 magnitude on Richter Scale
XII	Damage nearly total. Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.	8.0-8.9 magnitude on Richter Scale

III. RELATED PLANS AND PROGRAMS

Regional plans and programs related to public safety include the State Seismic Hazards Mapping Act, the California Environmental Quality Act (CEQA) Law and Guidelines, the Alquist-Priolo Earthquake Fault Zoning Act, the Uniform Building Code, and the Federal Emergency Management Agency (FEMA) Flood Insurance Program. Other plans and programs are important to consider to ensure that the City has strong, comprehensive, and compatible tools to guide development decisions. Also, pursuant to State law, the City has developed a comprehensive emergency response plan.

A. California Seismic Hazards Mapping Act

California's Seismic Hazards Mapping Act of 1990 requires the State Geologist to compile maps identifying and describing seismic hazards zones throughout California. Guidelines prepared by the State Mining and Geology Board identify the responsibilities of State and local agencies in the review of development within seismic hazard zones. Development on a site that has been designated as a seismic hazard zone requires a geotechnical report and local agency consideration of the policies and criteria established by the Mining and Geology Board. Over the years, the program has expanded to include mapping of seismic-related hazards such as landslide-prone areas.

B. The Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Special Studies Zones Act was signed into law in 1972. (In 1994 it was renamed *Alquist-Priolo Earthquake Fault Zoning Act*.) The primary purpose of the Act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards.

C. FEMA Flood Insurance Program

The National Flood Insurance Act includes provisions for the National Flood Insurance Program (NFIP). Participating jurisdictions must exercise land use controls and purchase flood insurance as a prerequisite for receiving funds to purchase or build a structure in a flood hazard area. The NFIP provides federal flood insurance subsidies and federally financed loans for eligible property owners in flood-prone areas.

D. Uniform Building Code

The Uniform Building Code (UBC) is the primary tool used by local agencies to ensure seismic safety in structures. The code defines minimum lateral forces to resist seismic shaking, the use and purpose of the structure, the seismic zone, and four types of soil which effect degrees of shaking.

E. California Environmental Quality Act (CEQA)

The State legislature adopted CEQA in 1970 to ensure that environmental protection received due consideration in the planning and development process. CEQA requires a thorough analysis of potential environmental consequences which could result from a development project or plan that guides future development. CEQA provides a means by which City officials and the public can identify the potential impacts a project will have on a community, and to allow for mitigation or avoidance of such impacts.

IV. GEOLOGIC AND SEISMIC HAZARDS

A. Local Geologic Conditions

Moorpark is located in the Transverse Ranges physiographic province of southern California. The characteristic landforms that define this province are a series of predominantly east-west trending mountain ranges and their intervening valleys. The ranges encompass Ventura County, as well as parts of San Bernardino, Riverside, Los Angeles and Santa Barbara counties. At the base of the mountains, in the southern part of the Moorpark area, the floodplain of the Arroyo Simi forms the Little Simi Valley. Elevations along the valley floor range from about 400 to 600 feet.

Moorpark is underlain by primarily two types of geologic units: relatively weak semi-consolidated sedimentary bedrock in the hilly and mountainous areas, and loose, unconsolidated, often saturated, alluvial sediments in the valleys and canyon bottoms. Volcanic rock has been mapped locally in the Tierra Rejada area.

In general, the City lies between two active fault systems; the Oak Ridge fault on the north and the Simi-Santa Rosa fault on the south. The surface trace of the Oak Ridge fault is located at the foot of the Oak Ridge Mountains in the Santa Paula Valley and therefore does not traverse the City. The Simi-Santa Rosa fault passes longitudinally through the Las Posas Hills. The geologic structure between the two fault zones consists of fold and thrust terrain. In general, this terrain is more complex and less well understood than that associated with other types of fault systems, and often includes areas of secondary faulting. Such secondary features are not capable of generating earthquakes on their own, but instead are deforming the ground in response to regional stresses and movements on the larger, mountain-bounding fault system.

B. Seismic Hazards

Movement along a fault releases stored energy and tension, thereby producing earthquakes. While the Moorpark area is at risk from many natural and man-made hazards, the event with the greatest potential for loss of life or property and economic damage is an earthquake.

1. Faults and Earthquakes

Moorpark lies within a region with several active faults and therefore is subject to the risk and hazards associated with earthquakes. Faults that have the greatest impact on the Moorpark area include:

San Andreas Fault Zone – The San Andreas fault is the principal boundary between the Pacific and North American Plates and is comprised of five segments. The Carrizo and Mojave segments, which extend from central California to San Bernardino, are closest to the Moorpark area, where they join near the Tejon Pass (approximately 35 miles away). These segments are

estimated capable of producing magnitude 7.2 and 7.1 earthquakes, respectively. A rupture of either segment would result in peak ground accelerations in Moorpark ranging from about 0.06 g to 0.10 g.

Simi-Santa Rosa Fault Zone - The Simi-Santa Rosa Fault Zone consists of a series of closely spaced faults that extend in an east-northeast direction across the central part of Ventura County for a distance of more than 25 miles. In the Moorpark area, numerous subparallel, discontinuous faults have been mapped within the fault zone, as well as several fault splays that branch off the main faults to the northeast. Seismic activity along the fault zone appears to be relatively low, although the data is very limited. Evidence does suggest, however, a compressional stress system.

In the southern part of Moorpark, the California Division of Mines and Geology has designated an Alquist-Priolo Fault Zone for many of the traces of the Simi-Santa Rosa fault zone. The City requires development proposal involving large structures or subdivisions of more than four units to be accompanied by a geology report that locates any surface trace of the Simi-Santa Rosa Fault and designates appropriate setback distances from the surface traces of the fault. Figure 4-1 shows the Alquist Priolo Earthquake Fault zones in Moorpark and its area of interest.

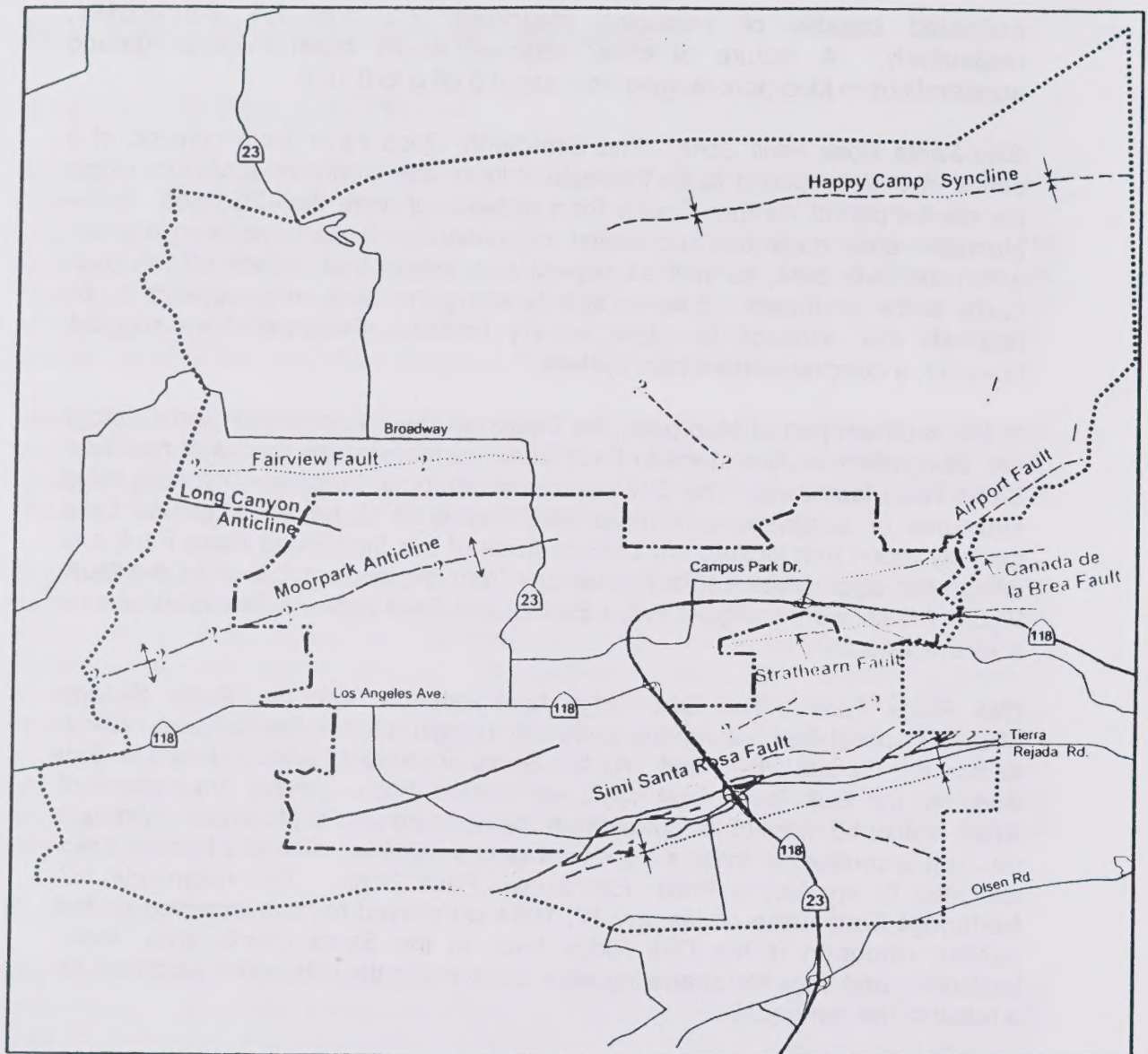
Oak Ridge Fault - The Oak Ridge fault extends from the Santa Susana Mountains westward, along the southern margin of the Santa Clara Valley, across the Oxnard Plain, and into the Santa Barbara Channel. Like the San Andreas, the Oak Ridge fault has been divided into segments, the closest of which is about 3 miles (5 km) away from the northern part of Moorpark. Although the fault is considered to be a significant seismic source, most of it has not been assigned to an Alquist Priolo Earthquake Fault Zone. The magnitude 6.7 Northridge Earthquake of January 17, 1994 is believed to have occurred on the eastern extension of the Oak Ridge fault, in the Santa Clarita area. Minor landsliding and ridge-top shattering were observed in the hills above Moorpark as a result of this earthquake.

San Cayetano Fault - The San Cayetano fault is one of the two deeply rooted, north-dipping thrust faults that form the northern boundary of the Ventura basin. At its closest point, this fault is approximately 5 miles (9km) from the City. Several small earthquakes have been associated with this active fault.

Santa Susana Fault - The Santa Susana fault merges with the Oak Ridge fault on the west and the San Fernando fault zone on the east. The fault is located about 4 miles (6 km) east-northeast of the Moorpark area. This fault is estimated capable of generating a magnitude 6.6 earthquake that would result in ground accelerations ranging from about 0.29 g to 0.60 g.

2. Seismic-related Hazards

Local geologic conditions can create additional hazards associated with seismic activity. Unstable soils on steep slopes may fail under the stress of a tremor. In locations where high groundwater levels interact with loose, unconsolidated soils,



- Fault considered active, with the potential for surface rupture
- Alquist-Priolo Earthquake Fault Zone Boundary
- Fault, solid where well located, dashed where approximate, dotted where concealed

- Lineament, from air photos
- ⊕ Axis of Synclinal Fold, dotted where concealed
- ⊕ Axis of Anticlinal Fold, dotted where concealed
- - - City Boundary
- ⋯ Area of Interest

Source: Earth Consultants International; California Division of Mines and Geology, 1999a and 1999c; Dibblee, T.W., 1992a and 1992b; Leighton and Associates, 1997

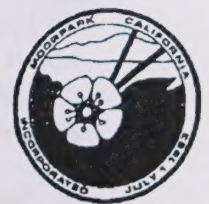


Figure 4-1
Alquist-Priolo
Earthquake Fault Zones



a condition called *liquefaction* can occur, whereby such soils lose cohesion — and their ability to support structures — when subjected to strong ground motion. Strong ground shaking of relatively long duration can be expected to occur in the Moorpark area as a result of an earthquake on any of the several active faults in the region. Loose, recently deposited sediments consisting primarily of silty sand and sand occur in a large portion of the valley floors and in the larger canyon bottoms. Water - saturated within about 50 feet of the surface have historically been present in the lowlands of Moorpark, including the Little Simi Valley, the Tierra Rejada Valley, and the elevated valley traversed by Broadway Street.

Under certain conditions, strong ground shaking can cause the densification of soils, resulting in local or regional settlement of the ground surface. Those portions of the Moorpark Area that may be susceptible to seismically induced settlement are generally the floodplains and larger drainages that are underlain by late Quaternary alluvial sediments (similar to the liquefaction-susceptible areas). Sites near the base of natural hills (valley margins) may be particularly vulnerable.

The hilly and mountainous areas of Moorpark are underlain by soft sedimentary bedrock. Earthquake-induced landslides could also impact developments adjacent to the mountain front the northern portion of Moorpark would be most vulnerable to seismically induced slope failure, due to the steep terrain and the presence of weak sedimentary rock units. Slopes adjacent to or within developments should be evaluated for these geologic conditions. Figure 4-2 shows areas mapped by the state as having a potential for liquefaction susceptibility and seismically induced landsliding.

Goals and Policies

Goal 1.0

Minimize the potential damage to structures and loss of life that could result from earthquakes.

Policy 1.1: Continue to implement Uniform Building Code seismic safety standards for construction of new buildings, and update the City's codes as needed in response to new information and standards developed at the State level.

Policy 1.2 Require the preparation of detailed geologic studies for any development proposal within seismic hazard zones and liquefaction hazard areas.

Policy 1.3: Perform a building inventory to locate, count, and identify buildings by structural type and occupancy.

Policy 1.4: When modifications to existing older buildings are proposed, determine whether an engineering evaluation is required to identify



Liquefaction



Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicated a potential for permanent ground displacements such that mitigation, as defined in Public Resources Code Section 2693c, would be required.

Source: Earth Consultants International;
California Department of Conservation,
<http://www.consrv.ca.gov/dmg/shezp/maps.htm>

Note: For further definition of liquefaction and landslides areas, please consult Technical Background Report.

Earthquake-Induced Landslides



Areas where previous occurrence of landslide movement, or local geological, geotechnical and groundwater conditions indicated a potential for permanent ground displacements such that mitigation, as defined in Public Resources Code Section 2693c, would be required.

----- City Boundary

..... Area of Interest



North 0 1 2 miles



Figure 4-2
Seismic Hazard Zones

seismic retrofit needs. Require that corrections be made to buildings deemed unsafe.

Policy 1.5: Encourage residential property owners to implement seismic safety improvements in older buildings, such as anchoring buildings to foundations, bolting water heaters to walls, and performing other preventative measures.

Policy 1.6: Participate in local, county, and State-sponsored earthquake preparedness programs.

Policy 1.7: Continue to monitor groundwater levels in all potential liquefaction areas. If the water levels reach within 40 feet of the surface, the City Engineer shall require appropriate mitigation to alleviate the hazard to large structures as necessary.

Goal 2.0

Ensure that all residents and business owners in Moorpark have full and equal access to information regarding seismic hazards.

Policy 2.1: Promote earthquake preparedness with publications available in the predominant languages spoken in the community.

Policy 2.2: Provide earthquake preparedness information at City-sponsored events.

C. Geologic Hazards

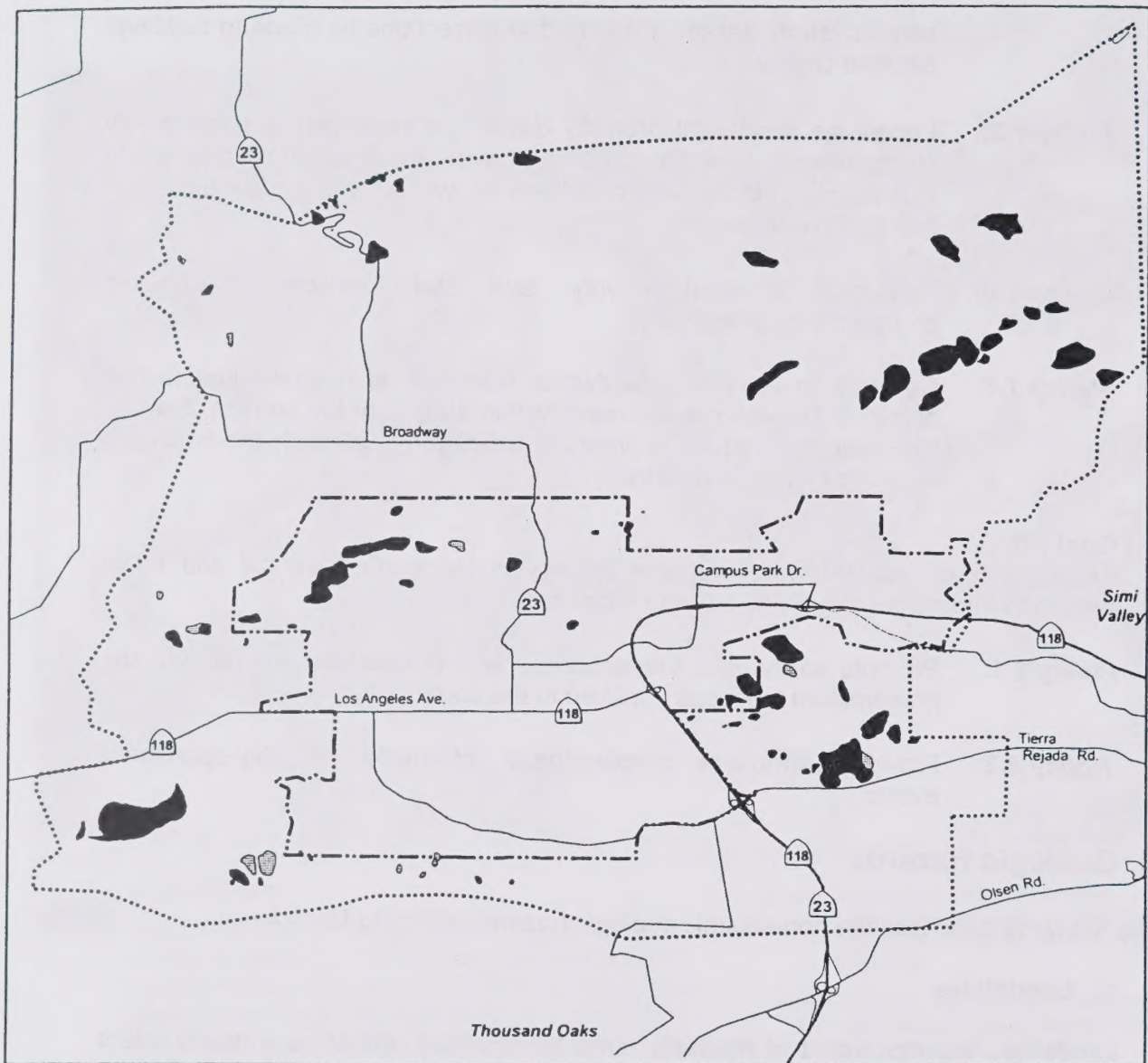
The following describes the non-seismic geologic hazards affecting Moorpark.

1. Landslides

Landslides are movement of relatively large landmasses, either as a nearly intact bedrock blocks or as jumbled mixes of bedrock blocks, fragments, debris, and soils. Considering the abundance of hillside terrain, the occurrence of landslides in Moorpark is notably infrequent as shown in Figure 4-3. Landsliding has occurred in isolated locations throughout the area. These locations include the mid reach of the Gabbert Canyon stream, a large slide complex present south of the Arroyo Las Posas, the south flank of Big Mountain, the Arroyo Simi, and the Las Posas Hills northeast of the Tierra Rejada Valley in the vicinity of the Simi-Santa Rosa fault zone.

2. Debris Flow

A debris flow (also called mudflow, mudslide, or debris avalanche) is a rapidly moving slurry of water, mud, rock, vegetation, and debris. Failure occurs during an intense rainfall event, following saturation of the soil from previous rains. Hazard



-  Definite or probable landslide
-  Questionable landslide

Source: Earth Consultants International;
 Dibblee, T.W., 1999a and 1992b;
 EDW, 1998
 Irvine, 1990 and 1995
 Leighton and Associates, 1997
 Weber, 1973

-  City Boundary
-  Area of Interest



Figure 4-3
Existing Landslides

mapping by the California Division of Mines and Geology placed most of the hillsides in Moorpark in a high mudslide risk zone, as well as unincorporated properties to the City's west and southeast. Most of the hillside areas have been reclassified as "marginally susceptible" to debris flow. Localized areas have been classified as "most susceptible" based on relatively common evidence for past debris flow. City review of development proposals includes consideration of debris flow.

3. Expansive Soils

Fine-grained soils such as silts and clays may contain variable amounts of expansive clay minerals. These minerals can expand when wetted and contract when dried. The upward pressures induced by the swelling of expansive soils can have significant harmful effects upon structures and other surface improvements.

Sedimentary units that are composed primarily of granular soils underlie most of Moorpark. Such units are typically in the low to moderately-low range for expansion potential. However, every such sedimentary unit contains lenses or layers of finer-grained soils (clays and silty clays) that typically are in the moderate to highly expansive range. Potentially expansive layers may be exposed at the surface by erosion or may be uncovered by grading cuts made for developments. Procedures that provide safe designs for expansive soils are incorporated in the Building and Safety Department and the City Engineer review process.

4. Ground Subsidence

Ground subsidence is the gradual settling or sinking of the ground surface with little or no horizontal movement. In the areas of Southern California where significant ground subsidence has been reported, this phenomenon is usually associated with the extraction of oil, gas, or groundwater from below the ground surface. Historically, no regional subsidence has been reported for the Moorpark area. However, the thick alluvial deposits underlying Little Simi Valley and Tierra Rejada Valley may be susceptible to subsidence should rapid groundwater withdrawal occur beneath the area in response to an increasing population. Possible measures to manage subsidence include increased use of reclaimed water, storm water, and imported water; protection of groundwater quality; and determining the safe yields of groundwater basins so that the available supplies can be balanced with groundwater extraction.

Goals and Policies

Goal 3.0

Protect public and private properties from geologic hazards associated with steep slopes, unstable hillsides, and subsidence.

Policy 3.1: Reduce the risk of impacts from geologic hazards by applying proper engineering, building construction, and retrofitting requirements to the development process.

- Policy 3.2:** Require that slope stability analyses be conducted for new development in hillside areas.
- Policy 3.3:** Require that hillside developments incorporate measures that mitigate slope failure potential and provide for long-term slope maintenance.
- Policy 3.4:** Participate in regional measures aimed at reducing the risk of subsidence throughout the City of Moorpark, the sphere of influence, and area of interest.

V. HAZARDOUS MATERIALS AND WASTES

In Moorpark, commercial and industrial businesses that use hazardous materials¹ include dry cleaners, film processors, auto service providers, landscape contractors, among many others. Residences also generate household hazardous wastes in the form of paints, thinners, pesticides, fertilizers, etc. Hazardous waste generators and users are required to comply with regulations enforced by several federal, state, and county agencies. The regulations aim toward reducing risk associated with human exposure to hazardous materials and minimizing adverse environmental effects.

The Fire Protection District for the County of Ventura functions as part of the City Government, similar to other departments within the City. The County Fire Protection District coordinates hazardous material and disaster preparedness planning and appropriate response efforts with City departments, as well as local and state agencies. Businesses within Moorpark that handle hazardous materials submit a business plan, including a chemical inventory, to the County Fire Protection District.

Despite all efforts to guard against health risks associated with hazardous materials, such materials can be released accidentally into the environment as a result of a natural disaster or improper storage and handling. The City's Standardized Emergency Management System (SEMS) Multihazard Functional Plan prepares City staff to react quickly and specifically to any hazardous materials accident. The SEMS designates Ventura County as the administering agency for hazardous materials in the City.

To address proper handling and disposal of household hazardous wastes, the City has adopted a Household Hazardous Waste (HHW) Element in accordance with the California Integrated Solid Waste Management Act of 1989. HHW drop-off facilities located in Thousand Oaks and Simi Valley are staffed by contracted personnel and are free to Moorpark residents.

Goals and Policies

Goal 4.0

Protect residents and business employees from potential hazards associated with the use, storage, manufacture, and transportation of hazardous materials in and through the City.

Policy 4.1: Continue to participate in the Standardized Emergency Management System and the Ventura County Stormwater Program [local enforcer of the National Pollutant Discharge Elimination System (NPDES) program].

Policy 4.2: Educate the community regarding the proper storage, handling, use, and disposal of hazardous household materials.

¹ The California Health and Safety Code defines a hazardous material as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant potential hazard to human health and safety or to the environment.

Policy 4.3: Require business owners to incorporate into their business plans submitted to the County Fire Protection District those measures necessary to minimize hazardous materials accidents due to intense ground shaking potential and flooding. Ensure that the plans are updated as necessary.

Policy 4.4: Continue to participate in the County-wide interagency coalition to better utilize the expertise and equipment that exists within all participating fire departments.

VI. FLOODING

A. Historic Flood Flows

Moorpark is drained by a system of streams that are part of the Calleguas Creek watershed. Calleguas Creek is locally referred to as Arroyo Simi (to the west, from Hitch Boulevard to Somis, it is called Arroyo Las Posas). The Arroyo Simi originates in the Santa Susana Mountains and drains an area of approximately 112 square miles at the confluence with Happy Camp Canyon.

Three types of storms produce precipitation in Ventura County: winter storms, local thunderstorms, and summer tropical storms. Winter storms are characterized by heavy and sometimes prolonged precipitation over a large area. Local thunderstorms can occur at any time, but usually cover relatively small areas. These storms are usually prevalent in the higher mountains during the summer. Tropical rains are infrequent, but typically occur in the summer or early fall. Yearly precipitation in the Moorpark area averages 14 inches. However, rainfall is extremely variable from year to year, ranging from one-third the normal amount to more than double the normal amount. This unpredictable seasonal range in rainfall, coupled with geographic and geologic conditions, makes Moorpark extremely vulnerable to flooding, erosion, and mudflows during the winter storm season.

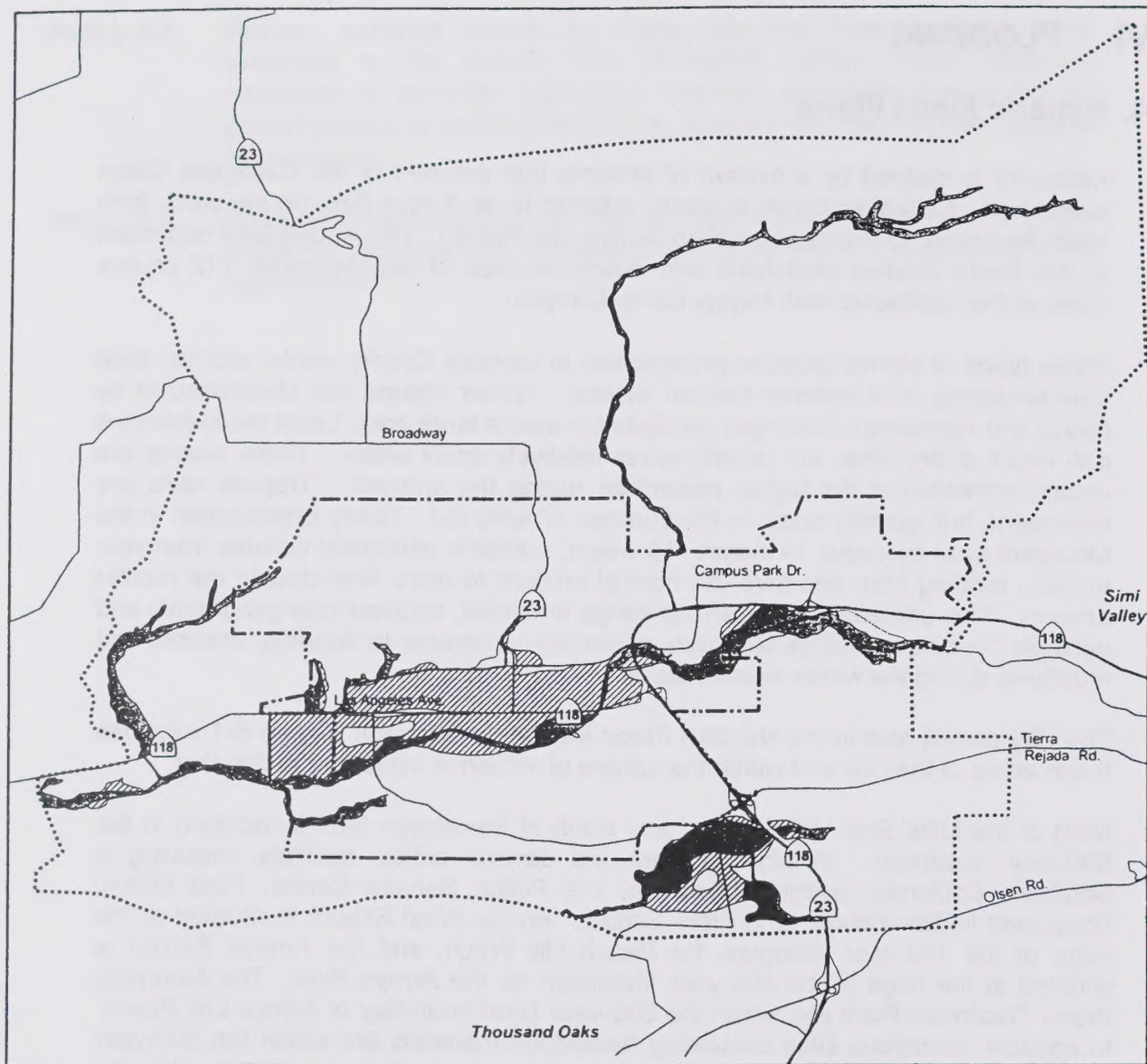
The City participates in the National Flood Insurance Program. Figure 6-1 indicates those areas of the City and within the sphere of influence subjected to flooding.

Most of the Little Simi Valley along and north of the Arroyo Simi is included in the 500-year floodplain. Within this area are several critical facilities, including a Southern California Edison Substation, the Police Service Center, Post Office, Chapparel Middle School, and Flory School. Arroyo West School is situated at the edge of the 100-year floodplain for Peach Hill Wash, and the Amtrak Station is situated at the edge of the 500-year floodplain for the Arroyo Simi. The Moorpark Water Treatment Plant lies within the 500-year flood boundary of Arroyo Las Posas. In addition, numerous sites containing hazardous materials are within the 500-year flood boundary in Little Simi Valley, and several are at the edge of the 100-year boundary for the Arroyo Simi.

B. Inundation

One major dam, the Wood Ranch Reservoir, is located upstream from the Moorpark Area within the Arroyo Simi. This dam is owned by the Calleguas Municipal Water District. The earth-fill dam was built in 1965, is 146 feet (45m) high, and 24 feet (7m) wide. The flood inundation plan, should the dam fail, is shown in Figure 6-2. The figure indicates that a large portion of Little Simi Valley would be flooded.

Other smaller flood control improvements, such as canals, culverts, and retention basins may crack and suffer some structural damage during an earthquake, especially in areas prone to ground failure. Seismically induced inundation can also occur if strong ground shaking causes structural damage to above-groundwater



-  Areas within 100-year flood zone
-  Areas with a less severe risk of flooding (between 100- and 500-year flood zones, flooding with average depths of less than one foot, contributing drainage area is less than one square mile, and/or protected by levee from the 100-year flood)

Source: Earth Consultants International; FEMA, 1985a,b,c,d,e; 1986b; 1990, and 1998

-  City Boundary
-  Area of Interest

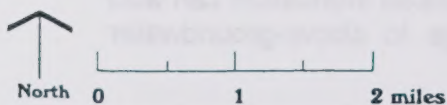
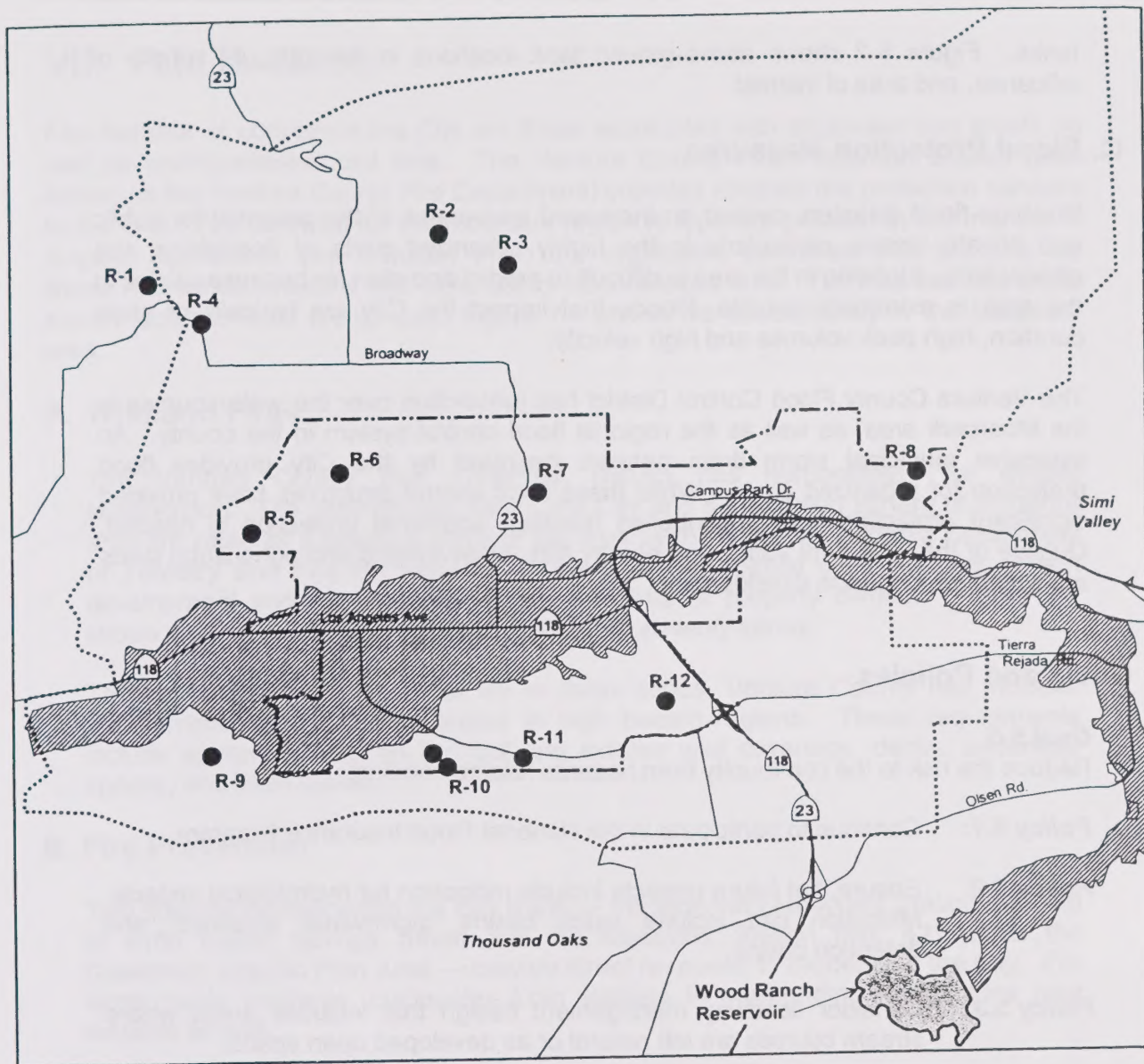


Figure 6-1
FIRM Flood Zones



 Dam or Reservoir Failure
Inundation Path

R-X ● Water Reservoir (tank)

--- City Boundary

..... Area of Interest

Source: Earth Consultants International;
Ventura County Waterworks
District No. 1



Figure 6-2
Dam Inundation Path
and Reservoir Locations



tanks. Figure 6-2 shows above-ground tank locations in the City, its sphere of influence, and area of interest.

C. Flood Protection Measures

Previous flood disasters caused an increased awareness of the potential for public and private losses, particularly in the highly urbanized parts of floodplains and alluvial fans. Flooding in the area is difficult to predict and plan for because rainfall in the area is extremely variable. Floods that impact the City are typically of short duration, high peak volumes and high velocity.

The Ventura County Flood Control District has jurisdiction over the watercourses in the Moorpark area, as well as the regional flood control system in the county. An extensive municipal storm drain network operated by the City provides flood protection for urbanized areas. While these flood control structures have provided significant protection from uncontrolled flooding, additional protection is needed. Outside of the Little Simi Valley and nearby hills, undeveloped and agricultural lands are slated for long-term development.

Goals and Policies

Goal 5.0

Reduce the risk to the community from hazards related flooding.

Policy 5.1: Continue to participate in the National Flood Insurance Program.

Policy 5.2: Ensure that future projects include mitigation for hydrological impacts. Mitigation can include catch basins, stormwater pipelines, and detention basins.

Policy 5.3: Consider floodway management design that includes areas where stream courses are left natural or as developed open space.

Policy 5.4: Improve flood control structures, including modification of the Walnut Canyon and Gabbert Canyon debris basins, addition of new detention basins, channel reconstruction, and diversion systems.

Policy 5.5: Encourage property owners with buildings located within a Special Flood Hazard Area to have all components of the property's electrical system raised at least one foot above the 100-year flood level.

VII. FIRE HAZARDS

Fire hazards of concern in the City are those associated with structures and brush, as well as earthquake-induced fires. The Ventura County Fire Protection District (also known as the Ventura County Fire Department) provides contract fire protection services to the City. Fire potential for the Moorpark region is typically greatest in the months of August, September, and October, when dry vegetation, combined with offshore dry Santa Ana winds, create a high potential for spontaneous fires. The hillsides and steep slopes facilitate rapid fire spread. Figure 7-1 shows fire susceptibility in the Moorpark area.

A. Wildland Fires

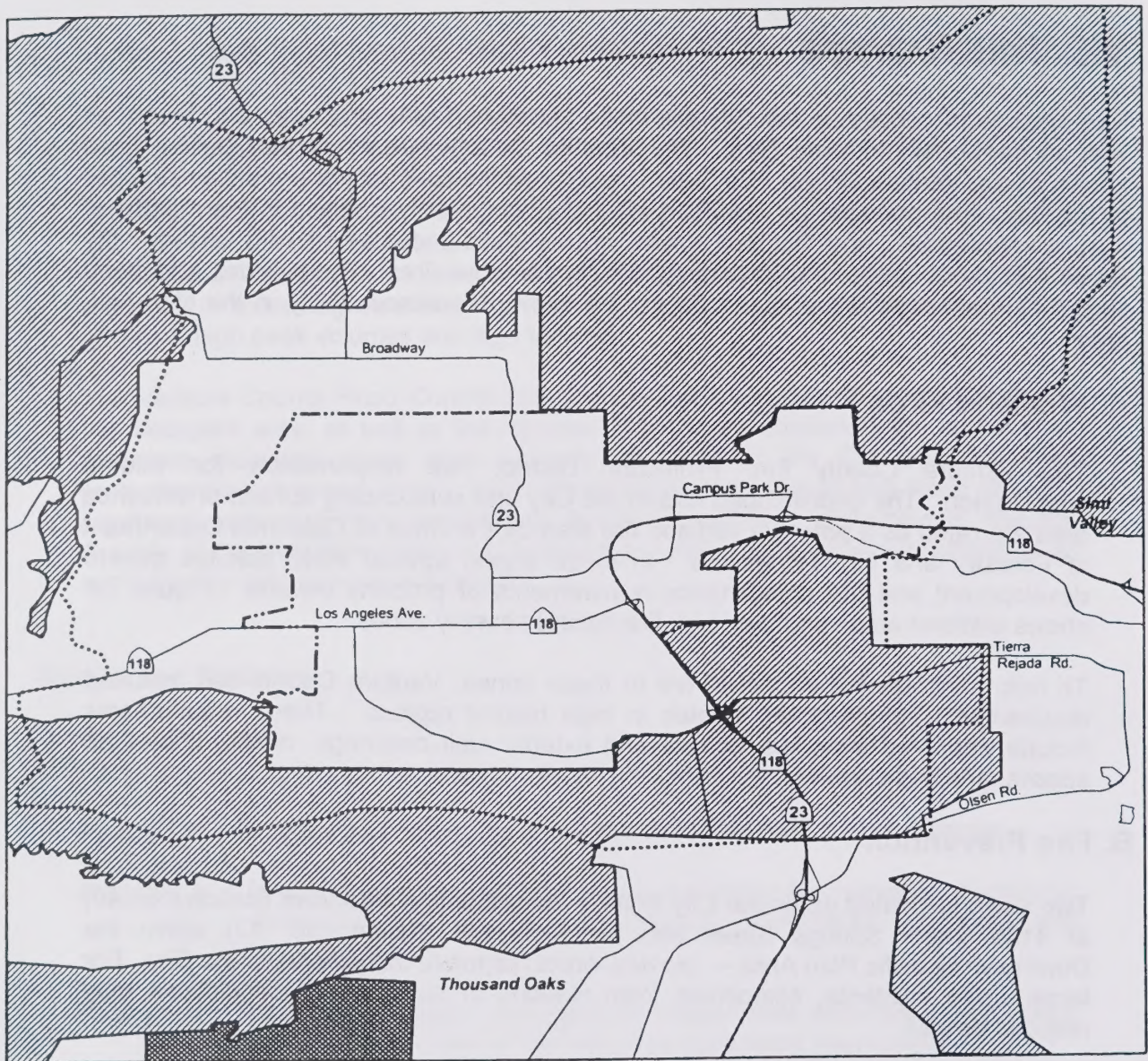
The Ventura County Fire Protection District has responsibility for wildfire suppression. The undeveloped hills in the City and surrounding sphere of influence area are rated as a potential wildland fire area by the State of California Department of Forestry and Fire Prevention. In these areas, special state statutes govern development and the maintenance requirements of property owners. Figure 7-1 shows wildland areas and very high fire hazard severity zones.

To help minimize the impact of fire in these zones, Ventura County has included requirements for structures located in high hazard regions. These requirements include approved materials for roof and exterior wall coverings, decks, underfloor spaces, and patio covers.

B. Fire Prevention

Two stations located within the City limits — the Mountain Meadows Station (No. 40) at 4185 Cedar Springs Street and the Moorpark Station (No. 42) within the Downtown Specific Plan Area — provide direct response to incidents in the City. For larger scale incidents, companies from stations in surrounding jurisdictions may respond as well.

The County of Ventura administers the Uniform Fire Code (UFC) and the Uniform Building Code (UBC) by updating the Ventura County Fire Protection Ordinance. This ordinance is updated every four years to incorporate the most recent versions of the UFC and UBC. The UFC includes requirements for minimum fire-flow rates for water mains. The requirements are a function of building size, type, material, purpose, location, proximity to other structures, and the type of fire suppression systems installed. The various water districts in the County are required to test fire protection capability for the various land uses per the flow requirements of the UFC.



Source: Earth Consultants International;
California Department of Forestry and Fire,
<http://www.fire.ca.gov/ab6/nhd56.pdf>

 Wildland Area that may contain substantial forest fire risks and hazards

 Very high fire hazard severity zone

----- City Boundary

..... Area of Interest



Figure 7-1
Moorpark Region Fire
Susceptibility Map

Table 7-1: Minimum Fire Protection Flows – Uniform Fire Code

Land Use	Flow (gallons per minute)	Duration (hours)	Fire Suppression Storage (million gallons)	Residual Pressure (psi)
Residential Single-Family	2,000	4	0.48	20
Residential-Estate, Single Family Frontier	2,500	4	0.60	30
Residential Multi-Family	3,000	4	0.72	20
Commercial/Industrial	4,000	4	0.96	20
Schools	3,500	4	0.84	20

The District has many programs aimed at fire prevention and protection, including the Fire Hazard Reduction Program. Key provisions include the following clearance requirements:

- Clearance around structures shall be not less than 100 feet.
- Single specimens of trees, ornamental shrubbery, or ground covers are permissible, provided they do not form a means of rapidly transmitting fire from the native growth to any structure. Such specimens shall be spaced a minimum of 15 feet from other specimens, structures, or surrounding native brush.
- Roof surfaces shall be maintained free of accumulations of leaves, needles, twigs, or any other combustible materials.
- Clearance should be 10 feet around propane tanks.
- Access roads shall be maintained with a minimum 10-foot clearance on each side of the traveled section.
- Large vacant parcels located in Hazardous Watershed Fire Areas bordering on developed areas (urban/wildland interface) shall have a 100-foot fuel break cleared along the entire interface border.

Goals and Policies

Goal 6.0

Reduce the risk to the community from hazards related to wildfires and structural fires.

Policy 6.1: Continue to implement the fire hazard reduction goals and policies set forth in the Ventura County General Plan.

Policy 6.2: Develop education and mitigation strategies that focus on enhanced hazards in the months of August, September, and October, when dry vegetation and Santa Ana winds coexist.

Policy 6.3: Continue to require noncombustible roofing materials for new and replacement roofing.

Policy 6.4: Continue a public education through the County Fire Protection District's Community Education/Public Information Division to inform residents as to how they can help reduce fire hazards.

VIII. EMERGENCY PREPAREDNESS

Major emergencies occur periodically in all communities. Proper emergency planning is an essential action to minimize the disruption, personal injury, and property damage associated with such events. Preventative measures and preparatory responses before an emergency occurs will hasten recovery.

A. Earthquake Preparedness

Following an earthquake, the ability of roads and critical facilities to support response and recovery operations affects the ultimate level of upset. Critical facilities are those parts of the infrastructure that must remain operational to provide shelter, medical services, law enforcement, fire protection, and similar public safety functions. Critical facilities include schools, hospitals, fire and police stations, emergency operation centers, and communication centers. Figure 8-1 illustrates the locations of Moorpark's fire stations, police stations, schools, and other essential facilities in relation to local seismic hazards.

Lifelines are those services critical to the health, safety, and functioning of the community, and are particularly essential for emergency response and recovery after an earthquake. Lifeline systems include water, sewage, electrical power, communication, transportation, natural gas, and liquid fuel systems.

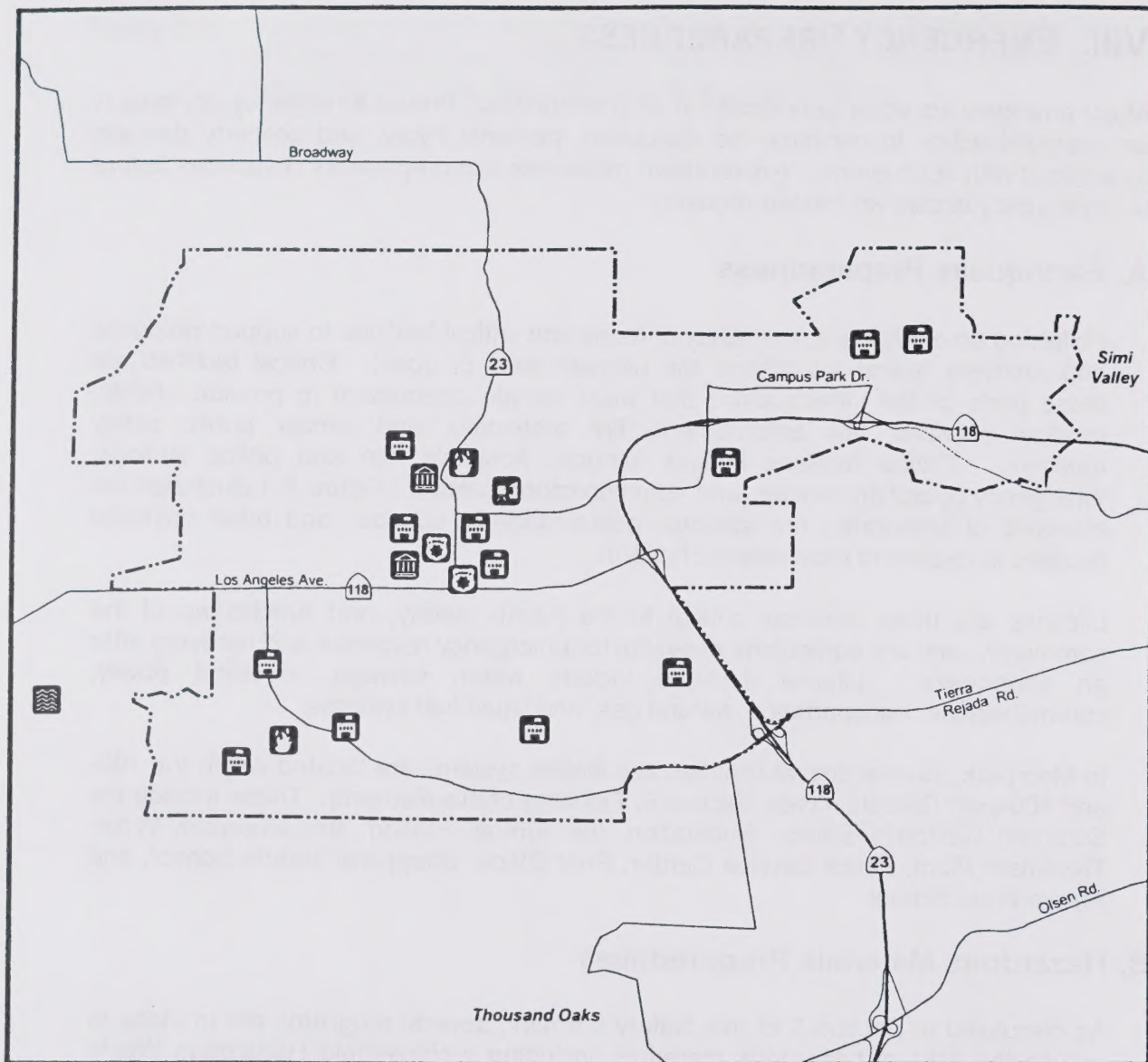
In Moorpark, several critical facilities and lifeline systems are located within the 100- and 500-year floodplain (see Section 6, Flooding of this element). These include the Southern California Edison Substation, the Amtrak Station, the Moorpark Water Treatment Plant, Police Service Center, Post Office, Chapparel Middle School, and Arroyo West School.

B. Hazardous Materials Preparedness

As discussed in Section 5 of this Safety Element, several programs are in place to reduce the risks of hazardous materials, including a Household Hazardous Waste Element and regulations set forth by the Ventura County Fire Protection District. The Moorpark Administrative Services Department has included an Emergency Management Plan to enhance the City's Multihazard Functional Plan. Moorpark participates in a County-wide interagency coalition to better utilize the expertise and equipment that exists within all participating fire departments. The County of Ventura coalition is considered a full-service Hazardous Materials Division.

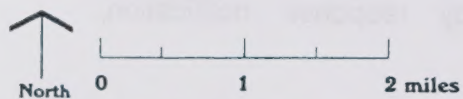
C. Fire Preparedness

Section 7 of this Element outlined the fire hazards within Moorpark and programs for fire prevention and suppression. Each Spring, the Ventura County Fire Protection District inspects properties and notifies owners of fire hazards and compliance requirements. The Ventura County Sheriff's Department Office of Emergency Services provides public information on emergency response notification, evacuation, and sheltering due to fire.



- | | | | |
|---|-----------------------|---|---------------|
|  | Government Building |  | Train Station |
|  | Fire Station |  | School |
|  | Police Service Center | | |
|  | Water Treatment Plant | | |

- City Boundary
- Area of Interest



Source: Earth Consultants International;
 Thomas Guide, Santa Barbara,
 San Luis Obispo and Ventura Counties,
 1999
 Moorpark Map,
 Moorpark Chamber of Commerce



Figure 8-1
Critical Facilities

D. Emergency Services

Moorpark has developed an Emergency Services Program to maintain a responsible level of emergency preparedness in the City. The program includes the following components.

- City staff receives training in emergency preparedness, management, and mitigation.
- The City maintains an Emergency Operations Center.
- The City Organizes and trains a Disaster Assistant Response Team (DART) comprised of Moorpark resident volunteers.
- The City promotes emergency planning, training, public awareness, and education for emergency preparedness.

Goals and Policies

Goal 7.0

Improve the ability of the City to respond effectively to natural and human-caused emergencies.

Policy 7.1: Continue the development of local preparedness plans and multi-jurisdictional cooperation and communication for emergency situations.

Policy 7.2: Educate residents and businesses regarding appropriate actions to safeguard life and property during and immediately after emergencies.

Policy 7.3: Develop flood warning systems and evacuation plans for those portions of the 100- and 500-year flood zones that have already been developed (especially important for areas near the Arroyo Simi and for existing critical facilities and lifeline systems).

Policy 7.4: Ensure that new critical facilities are not permitted in floodplains unless they are elevated above the projected inundation depths and/or otherwise protected.

IX. IMPLEMENTATION PROGRAM

The Safety Element Implementation Program provides a guide for City elected officials and staff to implement adopted Safety Element policies. The Implementation Program translates from general terms to specific actions the overall direction provided in the Safety Element to reduce the potential risk of death, injuries, property damage, and economic and social dislocation resulting from hazards. Each strategy outlined in this Implementation Program relates directly to policies outlined in the previous sections of the Safety Element.

The Implementation Plan identifies actions, procedures, and techniques and describes the agency/department responsible for implementation, as well as targeted time frames.

A. Geologic and Seismic Hazards

1. Minimize damage from earthquakes and other geologic activity

Implement the most recent state and seismic requirements for structural design of new development and redevelopment.

Responsible Agency/Department: Planning, Building and Safety, Engineering

Funding Source: General Fund, development fees

Time Frame: Ongoing

Related Policies: 1.1, 1.4, 3.1

2. Alquist-Priolo Earthquake Fault Zone

Require development proposals within the Simi Santa Rosa Fault Zone to include a geologic investigation, including fault trenching. After the geologic investigation, appropriate structural setbacks may be recommended.

Responsible Agency/Department: Planning, Building and Safety, Engineering

Funding Source: Development fees

Time Frame: Ongoing

Related Policies: 1.2

3. Soil and Geotechnical Surveys

During review of development proposals, require surveys of soil and geologic conditions by state-licensed Engineering Geologists and Civil Engineers where appropriate.

Responsible Agency/Department: Planning, Building and Safety, Engineering

Funding Source: General Fund, development fees

Time Frame: Ongoing

Related Policies: 1.2, 3.1

4. Review and update the City's Hillside Management Ordinance

Review and update the Hillside Management Ordinance (Chapter 17.38) to reduce hazards from slope instability and failure.

Responsible Agency/Department: Planning, Building and Safety, Engineering

Funding Source: General Fund

Time Frame: By 2004

Related Policies: 3.2, 3.3

5. Building Inventory

Conduct a building inventory to locate, count, and identify buildings by structural type and occupancy. Weak structures shall be retrofitted or rehabilitated to current building and fire codes.

Responsible Agency/Department: Planning, Building and Safety, Engineering

Funding Source: General Fund, property owners

Time Frame: Inventory by 2005; ongoing retrofit and rehabilitation

Related Policies: 1.3

6. Liquefaction Monitoring

Continue to monitor groundwater levels in all potential liquefaction areas of the city. If water levels reach within 40 feet of the surface, the City Engineer shall require appropriate mitigation measures for new development of large structures that may be affected. If water levels reach within 15 feet of the surface, mitigation for other new structures may be required.

Responsible Agency/Department: Planning, Building and Safety, Engineering

Funding Source: General Fund

Time Frame: Ongoing

Related Policies: 1.7

7. Subsidence

Undertake a comprehensive program to reduce use of local groundwater resources and to recharge basins to guard against future subsidence. Measures to be implemented

include use of reclaimed water for landscaping, capture of storm water runoff for beneficial reuse (including recharge), and ordinances requiring low-water-use plumbing fixtures in new developments.

Responsible Agency/Department: Planning, Building and Safety, Engineering, Ventura County Flood Control District, Calleguas Municipal Water District

Funding Source: General Fund, state and federal grants

Time Frame: By 2010

Related Policies: 3.4

B. Hazardous Materials and Wastes

1. Natural Hazard Overlays

Business plans submitted to the Ventura County Environmental Health Division for businesses that handle hazardous materials in the City of Moorpark will include engineering techniques to reduce the potential of hazardous materials tank spills during an earthquake. For those businesses located within 100- or 500-year flood zones, the business plan shall also provide mitigation measures to reduce the impact on surface waters from hazardous materials leaks during a natural disaster.

Responsible Agency/Department: Community Services, Building and Safety, Public Works, Ventura County Environmental Health Division

Funding Source: General Fund, Ventura County Environmental Health Division

Time Frame: Ongoing

Related Policies: 4.3

2. Standardized Emergency Management System (SEMS)

The City will maintain a Standardized Emergency Management System (SEMS) Multihazard Functional Plan that meets the Superfund Amendments and Reauthorization Act (SARA) of 1986. This emergency plan includes the location of local facilities and transportation routes where hazardous materials are present and an immediate response for accidents involving hazardous materials. The SEMS plan will be reviewed, tested, and updated each year.

Responsible Agency/Department: City Manager, Building and Safety, Community Services

Funding Source: General Fund

Time Frame: Ongoing

Related Policies: 4.1

3. NPDES

Continue participation in the Ventura County Stormwater Program (local enforcer of the National Pollutant Discharge Elimination System).

Responsible Agency/Department: City Manager, Public Works, Ventura County Stormwater Program

Funding Source: General Fund

Time Frame: Ongoing

Related Policies: 4.1

4. Household Hazardous Waste (HHW) Element

Maintain and update the City's HHW Element in accordance with the California Integrated Solid Waste Management Act of 1989. Continue public education about household hazardous waste disposal and the use of the existing drop-off facilities.

Responsible Agency/Department: Community Services

Funding Source: General Fund

Time Frame: Ongoing

Related Policies: 4.2

C. Flooding

1. National Flood Insurance Program

Continue to participate in the National Flood Insurance Program (NFIP).

Responsible Agency/Department: Public Works

Funding Source: General Fund

Time Frame: Ongoing

Related Policies: 5.1

2. Flood Warning System

Adopt a flood warning system and evacuation plan for properties within the 100- and 500-year flood zones that have already been developed.

Responsible Agency/Department: Planning, Engineering, Building and Safety, Ventura County Sheriff's Department of Emergency Services, Ventura County Fire Protection District, Ventura County Flood Control District, Calleguas Municipal Water District

Funding Source: General Fund, Ventura County Flood Control District, Calleguas Municipal Water District

Time Frame: By 2005 and ongoing

Related Policies: 7.3

3. Inundation Evacuation Plan

Develop an evacuation plan for populated areas within the limits of inundation below the Wood Ranch Reservoir, per State law.

Responsible Agency/Department: Planning, Engineering, Building and Safety, Ventura County Sheriff's Department of Emergency Services, Ventura County Fire Protection District, Ventura County Flood Control District, Calleguas Municipal Water District

Funding Source: General Fund, Ventura County Flood Control District, Calleguas Municipal Water District

Time Frame: By 2005 and ongoing

Related Policies: 7.2

4. Flood Control System

Coordinate with the Ventura County Flood Control District (VCFCD) regarding flood control and mitigation from new development. Review proposed development projects to determine potential increased runoff and alterations to natural stream courses. Impose conditions on new development as appropriate, including catch basins, culverts, and detention basins, among others. Land development planning can include leaving stream courses natural or as developed open space that can withstand inundation.

Responsible Agency/Department: Planning, Engineering, Building and Safety, Ventura County Flood Control District

Funding Source: Development fees, Ventura County Flood Control District

Time Frame: Ongoing

Related Policies: 5.2, 5.3

5. Flood Control Structures

Continue to improve flood control structures throughout the city. Retrofit any flood control structures at risk of structural failure to minimize damage from earthquakes.

Responsible Agency/Department: Public Works, Ventura County Waterworks District No. 1, Calleguas Municipal Water District

Funding Source: General Fund, Ventura County Waterworks District No. 1, Calleguas Municipal Water District

Time Frame: Ongoing

Related Policies: 5.4

D. Fire Hazards

1. Fire Prevention Education

Develop an education program that informs property owners about what they can do to reduce the risk of fire on their property. The most important mitigation strategy is maintaining a fire-safe landscape, which creates a defensible space around structures. The width of the defensible space should be based on the relative wildland fire susceptibility of the area. Education should focus on the higher hazard present in the months of August, September, and October.

Responsible Agency/Department: Planning, Engineering, Ventura County Fire Protection District

Funding Source: General Fund, Ventura County Fire Protection District

Time Frame: By 2001 and ongoing

Related Policies: 6.2, 6.4

2. Fire Hazard Reduction Ordinance

Adopt a fire hazard reduction ordinance based on the standards developed by the State Fire Marshall Fire Engineering Division. These standards include: road standards for fire equipment access, structural standards, and fuel modification standards.

Responsible Agency/Department: Building and Safety, Engineering, Ventura County Fire Protection District

Funding Source: General Fund, development fees

Time Frame: By 2002

Related Policies: 7.1

3. Safety Standards

Maintain restrictions on the use of untreated wood shingles or shakes for new or replacement roofing. Update fire-flow requirements to reflect the most recent Uniform Fire Code standards.

Responsible Agency/Department: Planning, Building and Safety, Ventura County Fire Protection District, Engineering

Funding Source: General Fund, development fees

Time Frame: Ongoing

Related Policies: 6.3

4. Adequate Water Supplies

Coordinate with the Ventura County Fire Protection District to ensure that developed areas of the city have sufficient water supplies nearby for fire-fighting purposes.

Responsible Agency/Department: Building and Safety, Ventura County Fire Protection District, Engineering

Funding Source: General Fund, development fees

Time Frame: Ongoing

Related Policies: 7.1

5. Fire-flow Requirements

Update fire-flow requirements to reflect the most recent Uniform Fire Code standards.

Responsible Agency/Department: Building and Safety, Ventura County Fire Protection District, Engineering

Funding Source: General Fund, development fees

Time Frame: By 2001 and ongoing

Related Policies: 7.1

6. Ventura County General Plan

Continue to work with the County Fire Protection District, County Public Works Agency, and the County Sheriff's Department of Emergency Services to carry out the policies set forth in the Ventura County General Plan.

Responsible Agency/Department: Planning, Building and Safety, Engineering, Ventura County Fire Protection District, County Public Works Agency, Ventura County Sheriff's Department of Emergency Services

Funding Source: General Fund, Ventura County Fire Protection District, County Public Works Agency, Ventura County Sheriff's Department of Emergency Services

Time Frame: Ongoing

Related Policies: 6.1

E. Emergency Preparedness

1. Coordination with County Departments and Agencies

Continue to coordinate emergency preparedness related to seismic and geologic hazards, hazardous materials, and fire hazards with the appropriate County agency or department.

Responsible Agency/Department: Community Services, Planning, Building and Safety, Ventura County Fire Protection District, Ventura County Sheriff's Department of Emergency Services

Funding Source: General Fund, Ventura County Fire Protection District, Ventura County Sheriff's Department of Emergency Services

Time Frame: Ongoing

Related Policies: 1.6, 3.4, 4.4, 7.1

2. Emergency Services Program

Continue the City's Emergency Services Program that focuses on public education and emergency preparation.

Responsible Agency/Department: Community Services, Building and Safety

Funding Source: General Fund

Time Frame: Ongoing

Related Policies: 1.5, 2.1, 2.2, 4.2, 5.5, 7.1, 7.2

3. Location of New Critical Facilities

Ensure that new critical facilities are not located within the 100- or 500-year flood zones unless the facilities are elevated above the projected inundation depths and/or otherwise protected.

Responsible Agency/Department: Engineering, Building and Safety

Funding Source: General Fund

Time Frame: Ongoing

Related Policies: 7.4

4. Community Education

Establish an educational program for local school children that teaches the importance of emergency preparedness and informs participants of the local conditions affecting emergency preparedness planning and safety awareness in Moorpark.

Responsible Agency/Department: Community Services, Ventura County Fire Protection District.

Funding Source: General Fund

Time Frame: By 2003 and ongoing

Related Policies: 1.6, 2.1, 2.2, 4.2, 6.2, 6.4, 7.2

X. GLOSSARY

Alquist-Priolo Earthquake Fault Zoning Act – A state law, signed in 1972, with the primary purpose to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of faults.

California Environmental Quality Act (CEQA) – A state law (California Public Resources Code Section 21000 et. seq.) requiring state and local agencies to regulate activities with consideration for environmental protection. If a proposed activity has the potential for a significant adverse environmental impact, an Environmental Impact Report (EIR) must be prepared and certified as to its adequacy before an agency may take action on the proposed project. EIRs may be required to identify geologic and seismic hazards, and to recommend potential mitigation measures, thus giving the local agency the authority to regulate private development projects in the early stages of planning.

California Seismic Hazards Mapping Act – Passed by the State in 1990 to address non-surface fault rupture earthquake hazards, including strong ground shaking, liquefaction, and seismically induced landslides.

Critical Facilities - Those facilities whose continued functioning is necessary to maintain public health and safety following a disaster. These facilities include fire and police stations, communications facilities, emergency operation centers, hospitals, administrative buildings, and schools designated as mass care shelters.

Dam Inundation (Seismically Induced Inundation) – Flooding which occurs as a result of the failure of water retention structures (such as dams) during an earthquake.

Detention Basin – A structure or facility, natural or artificial, which stores stormwater on a temporary basis and releases it at a controlled rate.

Fault - A fracture in the earth's crust forming a boundary between rock masses that have shifted.

Fault, Active - A fault showing proven displacement of the ground surface within approximately the last 11,000 years.

Fault, Inactive - A fault which shows no evidence of movement in the last 11,000 years and no potential for movement in the relatively near future.

Fault, Potentially Active – A fault showing evidence of movement within the last 1.6 million years (modified to 750,000 years by the U.S. Geological Survey); or a fault which, because it is judged to be capable of ground rupture or shaking, poses an unacceptable risk for a proposed structure.

FEMA – Federal Emergency Management Agency.

Fire Flow - A rate of water flow from a hydrant or similar feature that should be maintained to halt and reverse the spread of a fire.

Flood Insurance Rate Map (FIRM) – For each community, the official map on which the Federal Insurance Administration has delineated areas of special flood hazard and the risk premium zones applicable to that community.

Floodplain - A lowland or relatively flat area adjoining the banks of a river or stream which is subject to a one percent or greater chance of flooding in any given year (i.e., 100-year flood).

Floodway - The channel of a watercourse or river, and portions of the floodplain adjoining the channel, which are reasonably required to carry and discharge the base flood of the channel.

Grade - The degree of rise or descent of a sloping surface.

Ground Failure - Mudslide, landslide, liquefaction (see this Glossary), or the compaction of soils due to ground shaking from an earthquake.

Ground Shaking – Ground movement resulting from the transmission of seismic waves during an earthquake.

Groundwater - The supply of fresh water under the ground surface in an aquifer or soil that forms a natural reservoir.

Hazardous Materials - An injurious substance, including pesticides, herbicides, toxic metals and chemicals, liquefied natural gas, explosives, volatile chemicals and nuclear fuels.

Implementation Measure - An action, procedure, program, or technique that carries out general plan policy.

Infrastructure - The physical systems and services which support development and population, such as roadways, railroads, water, sewer, natural gas, electrical generation and transmission, telephone, cable television, storm drainage, and others.

Landslide - A general term for a falling or sliding mass of soil or rocks.

Lifelines – Services particularly essential for emergency response and recovery after an earthquake. Lifeline systems include water, sewage, electrical power, communication, transportation, natural gas, and liquid fuel systems.

Liquefaction - A process by which water-saturated granular soils transform from a solid to a liquid state due to groundshaking. This phenomenon usually results from shaking from energy waves released in an earthquake.

Mitigate – To ameliorate, alleviate, or avoid to the extent reasonably feasible.

National Pollutant Discharge Elimination System (NPDES) – A program, authorized by the federal government and administered by the State Regional Water Quality Control Board, which requires most new development projects to incorporate measures to

minimize pollutant levels in storm water runoff. Compliance is required at the time construction permits are issued, as well as over the long term through periodic inspections.

National Flood Insurance Program (NFIP) – The National Flood Insurance Program, managed by FEMA, makes federally backed flood insurance available in communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage.

Policy - Statements which guide action and imply clear commitment on the part of decision makers (e.g., "Continue to require noncombustible roofing materials for new and replacement roofing.")

Program - A coordinated set of specific measures and actions (e.g., zoning, subdivision procedures, and capital expenditures) the local government intends to use in carrying out the policies of the general plan.

Seiche – An earthquake-generated wave in an enclosed body of water such as a lake, reservoir, or bay.

Seismic – Caused by or subject to earthquakes or earth vibrations.

Seismically Induced Landslides – Landslides which occur when strong ground motions exacerbate existing unstable slope conditions, particularly if coupled with saturated ground conditions.

Seismically Induced Settlement – Under certain conditions, strong ground shaking can cause the densification of soils, resulting in local or regional settlement of the ground surface. This type of ground failure typically occurs in loose granular, cohesionless soils, and can occur in either wet or dry conditions.

Sewer - Any pipe or conduit used to collect and carry away sewage from the generating source to a treatment plant.

Sphere of Influence –The probable ultimate physical boundaries and service area of a local agency (city or district) as determined by the Local Agency Formation Commission (LAFCO) of the County.

Slope – Land gradient described as the vertical rise divided by the horizontal run, and expressed in percent.

Solid Waste - Unwanted or discarded material, including garbage with insufficient liquid content to be free flowing, generally disposed of in landfills or incinerated.

Special Flood Hazard Areas (SFHA) – Areas determined by FEMA that have a one percent chance of a major flood event occurring in any one year.

Subsidence – The sudden sinking or gradual downward settling and compaction of soil and other surface material with little or no horizontal motion. Subsidence may be caused by a variety of human and natural activities, including earthquakes.



Uniform Building Code (UBC) – A standard building code which sets forth minimum standards for construction.

Water Course - Any natural or artificial stream, river, creek, ditch, channel, canal, conduit, culvert, drain, waterway, gully, ravine or wash in which water flows in a definite channel, bed and banks, and includes any area adjacent thereto subject to inundation by reason of overflow or flood water.